

**PROPOSED AMENDMENTS TO
APPLIANCE EFFICIENCY REGULATIONS**

**CALIFORNIA CODE OF REGULATIONS TITLE 20, SECTIONS
1601 THROUGH 1608**

2011 APPLIANCE EFFICIENCY RULEMAKING,

**PHASE II – BATTERY CHARGER SYSTEMS AND SELF-
CONTAINED LIGHTING CONTROLS**



**CALIFORNIA
ENERGY COMMISSION**

Edmund G. Brown Jr., Governor

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Proposed new language appears as underline (example) and proposed deletions appear as strikeout (example). Existing language appears as plain text. Three dots or “...” represents the substance of the regulations that exist between the proposed language and current language.

Section 1601. Scope.

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(l) Emergency lighting, which is illuminated exit signs, and self-contained lighting controls.

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(w) Battery charger systems, except those:

- (1) used to charge a motor vehicle that is powered by an electric motor drawing current from rechargeable storage batteries, fuel cells, or other portable sources of electrical current, and which may include a nonelectrical source of power designed to charge batteries and components thereof. This exception does not apply to autoettes, electric personal assistive mobility devices, golf carts, or low speed vehicles, as those vehicles are defined in Division 1 of the California Vehicle Code;
- (2) that are classified as Class II or Class III devices for human use under the Federal Food, Drug, and Cosmetic Act and require U.S. Food and Drug Administration listing and approval as a medical device;
- (3) used to charge a battery or batteries in an illuminated exit sign, as defined in Section 1602(l);
- (4) with input that is three phase of line-to-line 300 volts root mean square or more and is designed for a stationary power application;
- (5) that are battery analyzers; or
- (6) that are voltage independent or voltage and frequency independent uninterruptible power supplies as defined by International Electrotechnical Commission (IEC) 62040-3 ed.2.0 (2011).

...

The following documents are incorporated by reference in Section 1601.

Number

Title

INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)

Copies available from: International Electrotechnical Commission
3, rue de Varembe
P.O. Box 131
CH – 1211 Geneva 20
Switzerland
<http://www.iec.ch>
Phone: +41 22 919 02 11
FAX: +41 22 919 03 00

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Section 1602. Definitions.

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(l) Emergency Lighting and Self-Contained Lighting Controls.

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“Astronomical time-switch control” means an automatic time switch control device capable of controlling lighting based on the time of day or astronomical events such as sunset and sunrise, accounting for geographic location and date of the year.

“Automatic daylight control” means a self-contained lighting control device that automatically adjusts lighting levels by using one or more photosensors to detect changes in daylight illumination and then changing the electric lighting level in response to the changes in daylight.

“Automatic time-switch control” means a self-contained lighting control device that controls lighting based on the time of day.

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“Dimmer” means a self-contained lighting control device that varies the current through an electric light in order to control the level of illumination and energy use.

“DIP switch” means one of a set of small on-off switches mounted inside a self-contained lighting control that modifies the functionality of the lighting control.

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“Lighting control system” means a lighting control in which two or more components are required to be installed in the field to provide all of the functionality required to make a fully functional and compliant lighting control. Lighting control systems are regulated under Sections 119 and 134 of the Title 24 of the California Code of Regulations.

“Lighting photo control” means an automatic daylight control device that automatically turns lights on and off in response to the amount of daylight that is available, and may also have the capability to provide a signal proportional to the amount of daylight to a self-contained lighting control system for the purpose of continuously dimming the electric lights.

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“Occupant sensing device” means a self-contained lighting control that automatically controls light, allows for complete manual operation, and includes the following devices:

- (1) “Motion sensor,” which means an occupant sensing device that is used outdoors, automatically turns lights off when an area is vacated, and automatically turns the lights on when the area is occupied.
- (2) “Occupant sensor,” which means an occupant sensing device that is used indoors and automatically turns lights on or off when an area is occupied or vacated, respectively.
- (3) “Partial off,” which means a motion sensor, an occupant sensor, or a vacancy sensor that automatically turns off part of the lighting load when an area is vacated and is capable of automatically turning on the lighting load when an area is occupied.
- (4) “Partial on,” which means a motion sensor, an occupant sensor, or a vacancy sensor that automatically turns lights off when an area is vacated and is capable of automatically and manually turning on part of the lighting load when an area is occupied.
- (5) “Vacancy sensor,” which means an occupant sensing device that automatically turns lights off when an area is vacated but requires lighting loads to be turned on manually.

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“Self-contained lighting control” means a unitary lighting control module where no additional components are required for it to be a fully functional lighting control. Self-contained lighting control includes an astronomical time-switch control; an automatic daylight control; an automatic time-switch control; a dimmer; a lighting photo control; or an occupant sensing device.

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“Wall box dimmer” means a dimmer manufactured and intended to be mounted inside an electrical box within a wall.

(w) **Battery Charger Systems**

“Accumulated non-active 24 hour charge and maintenance energy” means the sum of the energy, in watt-hours, consumed by the battery charger system in charge and battery-maintenance mode ~~and standby mode~~ when charging the battery over time periods as defined in the applicable test method in Section 1604(w). This time period may exceed 24 hours.

~~“Active mode” means the condition in which the battery is receiving the main charge, equalizing cells, and performing other one-time or limited-time functions necessary for bringing the battery to the fully charged state.~~

“À la carte charger” means a battery charger that is individually packaged without batteries. À la carte chargers include those with multi-voltage or multi-port capability.

“Battery” or “battery pack” means an assembly of one or more rechargeable cells intended to provide electrical energy to a ~~consumer~~ product, and may be in one of the following forms: (a) detachable battery: a battery that is contained in a separate enclosure from the ~~consumer~~ product and is intended to be removed or disconnected from the ~~consumer~~ product for recharging; or (b) integral battery: a battery that is contained within the ~~consumer~~ product and is not removed from the ~~consumer~~ product for charging purposes.

“Battery analyzer” means a device:

- (1) used to analyze and report a battery’s performance and overall condition;
- (2) capable of being programmed and performing service functions to restore capability in deficient batteries; and
- (3) not intended or marketed to be used on a daily basis for the purpose of charging batteries.

“Battery backup” or “uninterruptible power supply charger (UPS)” means a small battery charger system that is voltage and frequency dependent (VFD) and designed to provide power to an end use product in the event of a power outage, and includes a UPS as defined in IEC 62040-3 ed.2.0 (2011). The output of the VFD upon which the UPS is dependent changes in AC input voltage and frequency and is not intended to provide additional corrective functions, such as those relating to the use of tapped transformers.

“Battery charger system (BCS)” means a battery charger coupled with its batteries or battery chargers coupled with their batteries, which together are referred to as *battery charger systems*. This term covers all rechargeable batteries or devices incorporating a rechargeable battery and the chargers used with them. Battery charger systems include, but are not limited to:

- (1) electronic devices with a battery that are normally charged from AC line voltage or DC input voltage through an internal or external power supply and a dedicated battery charger;
 - (2) the battery and battery charger components of devices that are designed to run on battery power during part or all of their operations;
 - (3) dedicated battery systems primarily designed for electrical or emergency backup; and
 - (4) devices whose primary function is to charge batteries, along with the batteries they are designed to charge. These units include chargers for power tool batteries and chargers for automotive, AA, AAA, C, D, or 9 V rechargeable batteries, as well as chargers for batteries used in larger industrial motive equipment and à la carte chargers.
- (5) The charging circuitry of battery charger systems may or may not be located within the housing of the end-use device itself. In many cases, the battery may be charged with a dedicated external charger and power supply combination that is separate from the device that runs on power from the battery.

“Battery energy” means the energy, in watt-hours, delivered by the battery under the specified discharge conditions as determined using the applicable test method in Section 1604(w).

“Battery maintenance mode (maintenance mode)” means the mode of operation when the battery charger system is connected to the main electricity supply and the battery is fully charged, but is still connected to the charger.

“Charge return factor” means the number of ampere hours (Ah) returned to the battery during the charge cycle divided by the number of Ah delivered by the battery during discharge.

“Energy ratio” or “nonactive energy ratio” means the ratio of the accumulated nonactive energy divided by the battery energy.

“Inductive charger system” means a small battery charger system that transfers power to the charger through magnetic or electric induction.

“Large battery charger system” means a battery charger system (other than a battery charger system for golf carts) with a rated input power of more than 2 kW.

“Multi-port charger” means a battery charger that is capable of simultaneously charging two or more batteries. These chargers also may have multi-voltage capability, allowing two or more batteries of different voltages to charge simultaneously.

~~“Multi voltage a la carte charger” means a separate battery charger that is individually packaged without batteries, and is able to charge a variety of batteries of different nominal voltages.~~

~~“No battery mode/Standby mode (no load mode)” means the mode of operation when the battery charger is connected to the main electricity supply and the battery is not connected to the charger.~~

~~“Power conversion efficiency” means the instantaneous DC output power of the charger system divided by the simultaneous utility AC input power.~~

~~“Small battery charger system” means a battery charger system with a rated input power of 2 kW or less, and includes golf cart battery charger systems regardless of the output power.~~

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Section 1604. Test Methods for Specific Appliances.

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(l) Emergency Lighting and Self-Contained Lighting Controls.

(1) Emergency Lighting. The test method for illuminated exit signs is 10 CFR Section 431.204(b) (2008)

(2) Self-Contained Lighting Controls. There is no test method for self-contained lighting controls.

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(w) Battery Charger Systems.

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(1) ~~Federal~~ Test Method for Small Battery Charger Systems. The test method for small battery charger systems is 10 CFR Section 430.23(aa) (Appendix Y to Subpart B of Part 430) (200811).

(A) Multi-port battery charger systems shall be tested for 24-hour efficiency and maintenance mode with a battery in each port.

(B) For single port small battery charger systems, the highest 24-hour charge and maintenance energy, maintenance mode, and no battery mode results of the test procedure shall be used for purposes of reporting and determining compliance with Table W-2.

(C) For purposes of computing the small battery charger system standard, the number of ports included in a multi-port charger system shall be equal to the number ports that are separately controlled. For example a multi-port charger system that charges eight batteries by using two charge controllers that charge four batteries in parallel would use two for “N” as described in Table W-2.

(2) ~~California~~ **Test Method for Large Battery Chargers Systems.** The test procedure for large battery charger systems is *Energy Efficiency Battery Charger System Test Procedure* version 2.2 dated November 12, 2008 and published by ECOS and EPRI Solutions with the following modifications:

(A) The test procedure shall be conducted for 100, 80, and 40 percent discharge rates for only one charge profile, battery capacity, and battery voltage. The manufacturer shall test one battery and one charge profile using the following criteria:

1. the charge profile with the largest charge return factor;
2. the smallest rated battery capacity; and
3. the lowest voltage battery available at that rated capacity.

(B) The battery’s end of discharge voltage may be used in place of values in the test method Part 1, Section III.F, Table D.

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The following documents are incorporated by reference in Section 1604.

...

FEDERAL TEST METHODS

...

CFR, Title 10, Section 430.23 (~~2008~~2011)

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ECOS CONSULTING

Energy Efficiency Battery Charger System Test
Procedure Version 2.2 dated November 12, 2008

Copies available from:

Ecos Consulting
1199 Main Avenue #242
Durango, CO 81301
<http://www.efficientproducts.org/>
Phone: (970) 259-6801
FAX: (970) 259-8585

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Section 1605.1. Federal and State Regulations for Federally Regulated Appliances.

...

(l) Emergency Lighting and Self-Contained Lighting Controls.

(1) **Emergency Lighting.** The input power of an illuminated exit signs manufactured on or after January 1, 2006 shall not exceed five watts per face.

(2) **Self-Contained Lighting Controls.** See Section 1605.3(l) for energy design standards for self-contained lighting controls.

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Section 1605.2. State Regulations for Federally-Regulated Appliances.

...

(l) Emergency Lighting and Self-Contained Lighting Controls.

(1) See Section 1605.1(l) for energy efficiency standards for illuminated exit signs.

(2) See Section 1605.3(l) for design standards for self-contained lighting controls.

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Section 1605.3. State Regulations for Non-Federally-Regulated Appliances.

...

(l) Emergency Lighting and Self-Contained Lighting Controls.

(1) **Illuminated Exit Signs.** See Section 1605.1(l) for energy efficiency standards for illuminated exit signs.

(2) **Self Contained Lighting Controls** manufactured on or after January 1, 2013.

(A) All Self-Contained Lighting Controls.

1. The manufacturer shall provide instructions for installation and start-up calibration of all self-contained lighting control devices.

2. If indicator lights are integral to a self-contained lighting control system, such indicator lights shall consume no more than 1 watt of power per indicator light.

(B) Automatic Time-Switch Controls.

1. Residential automatic time switch controls labeled for use with lighting shall have program backup capabilities that prevent the loss of the device's schedule for at least 7 days, and the device's date and time for at least 72 hours if power is interrupted.
2. Commercial automatic time switch controls labeled for use with lighting shall:
 - a. have program backup capabilities that prevent the loss of the device's schedule for at least 7 days, and the device's date and time for at least 72 hours if power is interrupted;
 - b. be capable of providing manual override to each connected load and shall resume normally scheduled operation after manual override is initiated within 2 hours for each connected load; and
 - c. incorporate an automatic holiday shutoff feature that turns off all connected loads for at least 24 hours and then resumes normally scheduled operation.

(C) Astronomical Time-Switch Controls. Astronomical time switch controls shall:

1. meet the requirements of an automatic time-switch control;
2. have sunrise and sunset prediction accuracy within plus-or-minus 15 minutes and timekeeping accuracy within 5 minutes per year;
3. be capable of displaying date, current time, sunrise time, sunset time, and switching times for each step during programming;
4. have an automatic daylight savings time adjustment; and
5. have the ability to independently offset the on and off for each channel by at least 99 minutes before and after sunrise or sunset.

(D) Automatic Daylight Controls. Automatic daylight controls shall:

1. be capable of reducing the power consumption in response to measured day lighting either directly or by sending and receiving signals;
2. comply with Section 1605.3(j)(6)(B) if the day lighting control is capable of directly dimming lamps;

3. automatically return to its most recent time delay settings within 60 minutes when put in calibration mode;
4. have a set point control that easily distinguishes settings to within 10 percent of full scale adjustment;
5. have a light sensor that has a linear response within 5 percent accuracy over the range of illuminance measured by the light sensor;
6. have a light sensor that is physically separated from where the calibration adjustments are made, or is capable of being calibrated in a manner that the person initiating the calibration is remote from the sensor during calibration to avoid influencing calibration accuracy; and
7. comply with Section 1605.3(j)(5) if the device contains a photo control component.

(E) Lighting Photo Controls.

Lighting photo controls shall not have a mechanical device that permits disabling of the control.

(F) Dimmer Controls.

1. All dimmer controls shall:
 - a. be capable of reducing power consumption by a minimum of 65 percent when the dimmer is at its lowest level;
 - b. include an off position which produces a zero lumen output; and
 - c. not consume more than 1 watt per lighting dimmer switch leg when in the off position.
2. Dimmer controls that can directly control lamps shall provide electrical outputs to lamps for reduced flicker operation through the dimming range so that the light output has an amplitude modulation of less than 30 percent for frequencies less than 200 Hz without causing premature lamp failure.
3. Wall box dimmers and associated switches designed for use in three way circuits shall be capable of turning lights off, and to the level set by the dimmer if the lights are off.

(G) Occupant sensing devices.

1. All occupant sensing devices shall:

- a. be capable of automatically turning off all lights in the area no more than 30 minutes after the area has been vacated;
- b. allow all lights to be manually turned off regardless of the status of occupancy; and
- c. have a visible status signal that indicates that the device is operating properly, or that it has failed or malfunctioned. The visible status signal may have an override switch that turns off the signal.
- d. All occupant sensing devices that utilize ultrasonic radiation for detection of occupants shall:
 - (i) submit a Radiation Safety Abbreviated Report to the Center for Devices and Radiological Health, Federal Food and Drug Administration per 21 CFR 1002.12 (2011).
 - (ii) emit no audible sound, and shall not emit ultrasound in excess of the decibel levels shown in Table L-1 measured no more than five feet from the source, on axis.

TABLE L-1
Ultrasound Maximum Decibel Values

<i>Mid-frequency of Sound Pressure Third-Octave Band (in kHz)</i>	<i>Maximum db Level within third-Octave Band (in dB reference 20 micropascals)</i>
<u>Less than 20</u>	<u>80</u>
<u>20 or more to less than 25</u>	<u>105</u>
<u>25 or more to less than 31.5</u>	<u>110</u>
<u>31.5 or more</u>	<u>115</u>

- e. All occupant sensing devices that utilize microwave radiation for detection of occupants shall:
 - (i) comply with 47 CFR Parts 2 and 15 (2011); and
 - (ii) not emit radiation in excess of 1 milliwatt per square centimeter measured at no more than 5 centimeters from the emission surface of the device.
- f. Occupant sensing devices that are certified as having manual-on functionality shall not be capable of conversion by the user between manual and automatic on/off functionality and shall not incorporate DIP switches or

other manual means of conversion between manual and automatic functionality.

- g. Occupant sensing devices incorporating dimming shall be capable of:
 - (i) automatically turning on the connected loads from the off state to no
 - (ii) greater than 50 percent of power; and
 - (iii) automatically turning off connected loads.

2. Motion sensors shall be rated for outdoor use.

3. “Partial off” shall have dimming functionality or shall incorporate the following functionalities:

- a. have two poles;
- b. have one pole that is manual-on and manual off; and
- c. have one pole that is automatic-on and automatic-off and shall not be capable of conversion by the user to manual-on only functionality.

4. “Partial on” shall have dimming functionality or shall incorporate the following functionalities:

- a. have two poles each with automatic-off functionality;
- b. have one pole that is manual-on and shall not be capable of conversion by the user to automatic-on functionality; and
- c. have one pole that is automatic-on and shall not be capable of conversion by the user to manual-on functionality.

5. Vacancy sensors shall:

- a. not turn on lighting automatically and shall not be capable of conversion by the user to automatic on functionality;
- b. have a grace period of no more than 30 seconds and no less than 15 seconds to turn on lighting automatically after the sensor has timed out; and
- c. not have an override switch that disables the sensor.

(w) Battery Charger Systems.

...

- (1) **Energy Efficiency Standards for Large Battery Charger Systems.** Large battery charger systems manufactured on or after January 1, 2014, shall meet the applicable performance values in Table W-1.

Table W-1
Standards for Large Battery Charger Systems

<u>Performance Parameter</u>		<u>Standard</u>
<u>Charge Return Factor (CRF)</u>	<u>100 percent, 80 percent Depth of discharge</u>	<u>CRF ≤ 1.10</u>
	<u>40 percent Depth of discharge</u>	<u>CRF ≤ 1.15</u>
<u>Power Conversion Efficiency</u>		<u>Greater than or equal to: 89 percent</u>
<u>Power Factor</u>		<u>Greater than or equal to: 0.90</u>
<u>Maintenance Mode Power (E_b = battery capacity of tested battery)</u>		<u>Less than or equal to: $10 + 0.0012E_b$ W</u>
<u>No Battery Mode Power</u>		<u>Less than or equal to: 10 W</u>

- (2) **Energy Efficiency Standards for Small Battery Charger Systems.** Except as provided in paragraphs (3) and (4) of this subsection:
- a. small battery charger systems that are consumer products, as defined in section 1602(a), and are manufactured on or after January 1, 2013, shall meet the applicable performance values in Table W-2; and
 - b. small battery charger systems that are not consumer products, as defined in section 1602(a), and are manufactured on or after January 1, 2017, shall meet the applicable performance values in Table W-2.

EXCEPTION to Section 1605.3(w)(2): An à la carte charger that is :

- a. provided separately from and subsequent to the sale of small battery charger system manufactured before the effective date of the applicable standard in Section 1605.3(w)(2);
- b. necessary as a replacement for, or as a replacement component of, such small battery charger system;
- c. is provided by a manufacturer directly to a consumer or to a service or repair facility; and

d. is manufactured no more than five years after the effective date in Section 1605.3(w)(2) applicable to the particular small battery charger system for which the à la carte charger is intended as a replacement or replacement component, shall not be required to meet the applicable standard in Section 1605.3(w)(2) and Table W-2.

Table W-2
Standards for Small Battery Charger Systems

<i>Performance Parameter</i>	<i>Standard</i>
<u>Maximum 24 hour charge and maintenance energy (Wh)</u> (E_b = capacity of all batteries in ports and N = number of charger ports)	<u>For E_b of 2.5 Wh or less:</u> $16 \times N$
	<u>For E_b greater than 2.5 Wh and less than or equal to 100 Wh:</u> $12 \times N + 1.6E_b$
	<u>For E_b greater than 100 Wh and less than or equal to 1000 Wh:</u> $22 \times N + 1.5E_b$
	<u>For E_b greater than 1000 Wh:</u> $36.4 \times N + 1.486E_b$
<u>Maintenance Mode Power and No Battery Mode Power (W)</u> (E_b = capacity of all batteries in ports and N = number of charger ports)	<u>The sum of maintenance mode power and no battery mode power must be less than or equal to:</u> $1 \times N + 0.0021 \times E_b$ Watts

(3) **Inductive Charger Systems.** Inductive charger systems manufactured on or after January 1, 2013, shall meet either the applicable performance standards in Table W-2 or shall use less than 1 watt in maintenance mode, in no battery mode, and average 1 watt or less over the 24-hour charge and maintenance test.

(4) **Battery Backup and Uninterruptible Power Supplies.** Battery backup and uninterruptible power supplies manufactured on or after January 1, 2013, for consumer products and January 1, 2017, for products that are not consumer products shall consume no more than $0.8 + 0.0021 \times E_b$ watts in maintenance mode where E_b is the battery capacity in watt-hours.

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Section 1606. Filing by Manufacturers; Listing of Appliances in Database.

(a) Filing of Statements

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(3) Testing and Performance Information.

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EXCEPTION 4 to Section 1606(a)(3)(D):

Before July 1, 2014, manufacturers of large battery charger systems may certify multiple battery charger systems using the testing results of two or more representative battery charger system models, provided that all models so certified are designed to charge batteries of the same chemistry and design. All models certified in this manner must meet the requirements of Section 1606(a)(3)(D), in that untested models must have performance characteristics equal to or better than what is certified. For this reason, the models selected for testing by the manufacturer must be those that the manufacturer expects to have the lowest performance out of the set to be certified, and manufacturers must report the lowest values generated by the performed tests.

Manufacturers certifying their models using this alternate method shall, as part of the declaration required in Section 1606(a)(4), make a statement under penalty of perjury that all certified models meet all applicable standards and have performance characteristics equal to or better than the reported results.

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
L	<u>Self-Contained Lighting Controls</u>	<u>Includes installation and calibration instructions</u>	<u>Yes, no</u>
		<u>Includes indicator lights which consume one watt or more</u>	<u>Yes, no</u>
		<u>Meets the requirements of an automatic time switch control</u>	<u>Yes, no</u>
		<u>Meets the requirements of an astronomical time switch control</u>	<u>Yes, no</u>
		<u>Meets the requirements of an motion sensor</u>	<u>Yes, no</u>
		<u>Meets the requirements of an automatic daylight control</u>	<u>Yes, no</u>
		<u>Is integrated with a photo-control</u>	<u>Yes, no</u>
		<u>Meets the lighting photo-control requirements</u>	<u>Yes, no</u>
		<u>Meets the dimmer control requirements</u>	<u>Yes, no</u>
		<u>Meets general occupancy sensor requirements</u>	<u>Yes, no</u>
		<u>Is rated for outdoor use</u>	<u>Yes, no</u>
		<u>Meets partial on requirements</u>	<u>Yes, no</u>
		<u>Meets partial off requirements</u>	<u>Yes, no</u>
		<u>Meets vacancy sensor requirements</u>	<u>Yes, no</u>
		<u>Uses ultrasonic occupancy detection</u>	<u>Yes, no</u>
		<u>Meets ultrasound requirements</u>	<u>Yes, no</u>
<u>Uses electromagnetic radiation for occupancy detection</u>	<u>Yes, no</u>		
<u>Meets electromagnetic irradiance at 5cm from emitter (mW/cm²)</u>			

* "Identifier" information as described in Section 1602(a).
 1 = Voluntary for federally-regulated appliances
 2 = Voluntary for state-regulated appliances

...

Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
W	<u>Small Battery Charger Systems</u>	<u>24-hour charge and maintenance energy</u>	
		<u>Battery maintenance mode power</u>	
		<u>No battery mode power</u>	
		<u>Inductive charger systems</u>	<u>Yes, no</u>
		<u>Number of charger ports</u>	
		<u>Compatible battery chemistries</u>	
		<u>Battery backup or uninterruptible power supply</u>	<u>Yes, no</u>
	<u>Large Battery Charger Systems</u>	<u>Charge return factor 100</u>	
		<u>Charge return factor 80</u>	
		<u>Charge return factor 40</u>	
		<u>Power conversion efficiency</u>	
		<u>Power factor</u>	
		<u>Maintenance mode power</u>	
		<u>No battery mode power</u>	
		<u>Family certification</u>	<u>Yes, no</u>
	<u>Compatible battery chemistries</u>		

* "Identifier" information as described in Section 1602(a).

1 = Voluntary for federally-regulated appliances

2 = Voluntary for state-regulated appliances

...

(4) Declaration

(A) Each statement shall include a declaration, executed under penalty of perjury of the laws of California, that:

...

4. the appliance was tested under the applicable test method specified in Section 1604, and, for the following appliances, was tested as follows:

...

m. for battery charger systems for which certification is based on testing of representative battery charger system models, the models tested as representative are those known or expected to have the poorest

performance characteristics such that the data generated meets the requirements of Section 1606(a)(3)(E) for all associated models.

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Section 1607. Marking of Appliances.

...

(d) Energy Performance Information.

...

(12) Battery Charger Systems.

Each battery charger systems shall be marked with a "BC" inside a circle. The marking shall be legible and permanently affixed to the product nameplate that houses the battery charging terminals. Products with a nameplate area of less than ½ square inch shall permanently affix the marking to the retail packaging and, if included, the cover page of the instructions.

(13) Emergency Lighting and Self-Contained Lighting Controls.

All occupant sensing devices which utilize microwave radiation for detection of occupants shall be marked with an approved Federal Communications Commission identifier. In addition, such devices must have permanently affixed installation instructions recommending that the device be installed at least 12 inches from any area normally used by room occupants.

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